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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,667	03/29/2001	David A. Richard	VTE1-BO14	6167

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EXAMINER
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NGUYEN, HOAN C

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 01/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/821,667

Applicant(s)

RICHARD, DAVID A.

Examiner

HOAN C. NGUYEN

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features

- “the variable reflectance vehicle mirror is formed to have a rimless outer periphery” in claims 21-22, 44-45 must be shown or the feature(s) canceled from the claim(s). It seems showing in Fig.1 that the variable reflectance vehicle mirror (10/12/14) is formed to have a rim outer periphery.
- “ a first photo sensor” in claims 19, 25 must be shown or the feature(s) canceled from the claim(s).
- “ a second photo sensor” in claim 26 must be shown or the feature(s) canceled from the claim(s).
- “anterior transparent panel includes at least one optically enhancing coating” in claim 33.
- “anterior transparent panel includes an abrasion resistant coating formed thereon” in claim 34-35.
- “said anterior transparent panel includes a hydrophilic coating” in claims 36-37.

No new matter should be entered.

Art Unit: 2871

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4, 6, 8-9, 11-14, 21, 24, 28, 29, 38-44, 47-52 and 57 are rejected under 35 U.S.C. 102(b) as being anticipated by Weber et al. (US5686979).

Weber et al. teach (Fig. 1) a variable reflectance vehicle mirror which can be controlled to adjust reflectivity, comprising:

- a super twisted nematic (STN) liquid crystal cell 12 having a front side and a rear side;
- a first polarization filter (reflective polarizer 32) positioned on the front side of said STN liquid crystal cell;
- a second polarization filter (reflective polarizer 34) positioned on the rear side of said STN liquid crystal cell;
- a reflective layer positioned adjacent to said second polarization filter, said reflective layer comprises an enhanced aluminum material. (reflector placed behind the LCD assembly col. 1 lines 52-56);

Art Unit: 2871

- a control circuit 19 connected to said STN liquid crystal cell for controlling the birefringence of the STN liquid crystal cell to adjust the degree of reflection of the mirror.

wherein

- said STN liquid crystal cell includes a layer of super twisted nematic (STN) liquid crystal material positioned between a pair of transparent electrodes (claim 2).
- said STN liquid crystal material possesses a twist angle between approximately  $180^{\circ}$  and approximately  $270^{\circ}$  between the pair of electrodes (claims 3 and 50).
- said STN liquid crystal material possesses a twist angle of approximately  $210^{\circ}$  (claims 4 and 51)
- the surfaces of the pair of electrodes facing one another each include an alignment layer positioned thereon for orienting the STN liquid crystal material to its desired twist angle (claim 6).
- said STN liquid crystal cell further comprises front and rear transparent plates respectively positioned adjacent to outer surfaces of said electrodes (claim 8).
- said front and rear transparent plates are adhered together around their periphery to seal said STN liquid crystal cell together (claim 9).
- the first and second polarization filters are crossed polarizers (claim 11).
- the said control circuit is connected to said pair of transparent electrodes to apply a bias voltage across said electrodes (claim 12).
- the bias voltage applied across said electrodes by said control circuit may be varied to vary the twist angle of the STN liquid crystal material between said

Art Unit: 2871

electrodes in order to alter the reflectivity of the mirror to a desired level (claim13).

- said mirror is controllable over a continuous range of reflectance by varying the bias voltage applied across said electrodes (claim 14).
- the mirror can be controlled to adjust the level of reflectivity to a value of 60% between approximately 28% and approximately 94% (claim 24).
- said mirror is an independently controlled interior rearview mirror for a vehicle (claim 28).
- said mirror is an independently controlled exterior mirror for a vehicle (claim 29).
- the variable reflectance is provided by a super twisted nematic (STN) liquid crystal cell having variably controllable transmittance (claim 38).
- the birefringence of the TN liquid crystal cell is controlled to adjust the reflectivity of the mirror (claim 39) since the twisting of liquid crystal molecule controls the birefringence according to claim 41.
- the reflectance is continuously variable by continuously varying voltage cross LC cell (claim 40).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 7, 10, 15-18 and 53-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (US5686979).

It is well known in the art that

- the alignment layers comprise a polymer material which is surface treated to provide the desired orientation of the STN liquid crystal material (claim 7).
- a variable reflectance vehicle mirror further comprising spacers being positioned in said STN liquid crystal material between the front and rear transparent plates in order to provide a constant thickness of the space between the front and rear transparent plates (claim 7).
- a source of power from a vehicle from between approximately 6 - 40 volts d.c to operate the control circuit formed as stacked IC for low power consuming, generating a bias voltage to be applied to said STN liquid cell between approximately 2.7 to 5.5. volts d.c, which is operation voltage of STN liquid crystal cell (claims 15-17 and 53-56).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a variable reflectance vehicle mirror as Weber disclosed with the alignment layers comprise a polymer material which is surface treated to provide the desired orientation of the STN liquid crystal material and a variable reflectance vehicle mirror further comprising spacers being positioned in said STN liquid crystal material between the front and rear transparent plates for providing a constant thickness of the space between the front and rear transparent plates.

Art Unit: 2871

3. Claims 5, 15-17 and 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (US5686979) in view of Baughman et al. (US5111629A).

In regard to claim 5, Baughman et al. teach (col. 6 lines 1-8) the variable reflectance vehicle mirror of claim 2, wherein STN liquid crystal material further includes a cholesteric material for purposes of tint or coloration.

In regard to claims 15-17 and 53-55, Baughman et al. teach (col. 6 lines 1-8) the variable reflectance vehicle mirror of claim 2, wherein a source of power from a vehicle from between approximately 20 volts in a range of 6 - 40 volts d.c to operate the control circuit formed as stacked IC, generating a bias voltage to be applied to said STN liquid cell between approximately 2-20 volts, which cover a range of 2.7 to 5.5. volts d.c for minimizing the risk of shock hazard in the event of breakage or electrical malfunction.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a variable reflectance vehicle mirror as Weber disclosed with STN liquid crystal material further includes a cholesteric material for purposes of tint or coloration.

4. Claims 19, 20, 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (US5686979) in view of Gahan (US4799768) and Ohno et al. (US5469296A) providing in applicant's IDS.

Gahan teaches a variable reflectance vehicle mirror of further comprising a first photo sensor (rear light sensor 14) for detecting an intensity of light impinging upon said



Art Unit: 2871

first photo sensor and a second photo sensor (forward light sensor 12) for detecting ambient light levels and providing a signal indicating when the intensity of the ambient light detected is greater than a threshold value. It is conventional that the first and second photo sensors are directly attached to a housing for supporting and securing.

Nevertheless, Ohno et al. teach (fig. 3) a variable reflectance vehicle mirror of further comprising a first photo sensor (rear light sensor 8) for detecting an intensity of light impinging upon said first photo sensor and a second photo sensor (ambient light sensor 9) for detecting ambient light levels and providing a signal indicating when the intensity of the ambient light detected is greater than a threshold value. It is conventional that the first and second photo sensors are directly attached to a housing for supporting and securing.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a variable reflectance vehicle mirror as Weber disclosed with a first photo sensor (rear light sensor 14) for detecting an intensity of light impinging upon said first photo sensor and a second photo sensor (forward light sensor 12) for detecting ambient light levels and providing a signal indicating when the intensity of the ambient light detected is greater than a threshold value.

Art Unit: 2871

5. Claims 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (US5686979) in view of Iwashita et al. (US4715686).

Iwashita et al. teach a variable reflectance vehicle mirror with LCD further comprising anterior transparent panel (substrate 1) with antireflective coating 9 and abrasion resistant coating 2. There is conventional that the reflection layer 7 is formed on substrate or posterior transparent panel. Both anterior and posterior transparent panels conventionally are made of glass or synthetic plastic.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a variable reflectance vehicle mirror as Weber disclosed with anterior transparent panel (substrate 1) for supporting to form antireflective coating and abrasion resistant coating; and posterior transparent panel for supporting to form the reflecting layer.

6. Claims 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (US5686979) in view of Iwashita et al. (US4715686) as applied to claim 30, in further view of Kushibiki et al. (US6376695B1).

Kushibiki et al. teach the abrasion resistant coating comprises an organo-silicone (methylpolysiloxane) polymer with a thickness of approximately 2 to 10 microns for physical protection.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a variable reflectance vehicle mirror as Weber disclosed with the abrasion resistant coating comprises an organo-silicone

Art Unit: 2871

(methyldopolysiloxane) polymer with a thickness of approximately 2 to 10 microns for physical protection.

7. Claims 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (US5686979) in view of Iwashita et al. (US4715686) as applied to claim 30, in further view of Ando et al. (US5110637A).

Ando et al. teach the anterior transparent panel includes a hydrophilic coating formed thereon comprising zirconia and silicone dioxide for preventing reflection and abrasion.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a variable reflectance vehicle mirror as Weber disclosed with the anterior transparent panel includes a hydrophilic coating formed thereon comprising zirconia and silicone dioxide for preventing reflection and abrasion.

8. Claims 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (US5686979) in view of Iwashita et al. (US4715686) as applied to claim 30, in further view of Ohtsu et al. (US5976511A)

Ohtsu et al. teach at least one of said anterior and posterior transparent panels includes a hydrophobic coating containing a concentration of oxides for preventing UV light and a concentration of perfluoroalkylsilane for obtaining an oil- and water-repellent.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a variable reflectance vehicle mirror as Weber disclosed with at least one of said anterior and posterior transparent panels includes a hydrophobic coating containing a concentration of oxides for preventing UV light and a concentration of perfluoroalkylsilane for obtaining an oil- and water-repellent.

9. Claims 22-23 and 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (US5686979) as applied to claims 1 and 44, in view of Hirano et al. (WO9946211 A1).

Hirano et al. teach method using water jet to cut the liquid crystal glass substrate. Therefore it is obvious the method using water jet to cut or trim the liquid crystal cell, polarization filters made of resin and reflective layer formed on resin or glass substrate. For smoothening surface at edges, water jet is also used to fuse the edges of the liquid crystal cell, polarization filters and reflective layer.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Schofield et al. (US5550677A) disclose automatic rearview mirror system using a photo-sensor array.

Hara (US4671617) disclosed liquid crystal dazzle-free reflection mirror.

Art Unit: 2871


Black et al. (US5322996A) disclose mirror with dynamic dazzle light attenuation zone.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN  
Examiner  
Art Unit 2871

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January 7, 2003

  
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